

Claims

1. Method for producing a laminated embossed and printed web of flexible material, which comprises the following steps:
 - 5 separately embossing each of two web-shaped materials in selected embossing patterns while leaving other areas substantially non-embossed; printing at least one of said web-shaped materials in a selected printing pattern; said printing and embossing steps being synchronized so that printing occurs mainly in the non-embossed areas of the web-shaped material;
 - 10 transferring glue to the embossed areas of at least one of the web-shaped materials; and adhesively joining the embossed areas of the two web-shaped materials in a lamination step to form a laminated web product.
- 15 2. Method as claimed in claim 1, wherein the two web-shaped materials are embossed with identical or matching embossing patterns, and the embossing and lamination steps are synchronized so that the embossed areas of the two web-shaped materials are joined in a foot-to-foot or nested configuration.
- 20 3. Method as claimed in claim 1, further comprising keeping registry of the embossing, printing and lamination steps by using a central embossing roll, which embosses one of said web-shaped materials, which cooperates with a printing roll for printing one of said web-shaped materials, and which cooperates with a second embossing roll embossing the other of said web-shaped materials, for laminating the two web-shaped materials together.
- 25 4. Method as claimed in claim 3, further comprising synchronizing the central embossing roll and the printing roll so that at least 50% of the printed area of said selected printing pattern will be located on the non-embossed areas of the web.
- 30 5. Method as claimed in claim 3, further comprising synchronizing the central embossing roll and the printing roll so that at least 75% and preferably at least 90% of the printed area of said selected printing pattern will be located on the non-embossed portions of the web.
- 35 6. Method as claimed in claim 3, further comprising synchronizing the central embossing roll and the printing roll so that substantially all printed area of said selected printing pattern will be located on the non-embossed portions of the web.

7. Method as claimed in claim 3, further comprising synchronizing the central embossing roll and the printing roll so as to arrange said selected embossed areas as groups of embossment sites, said groups being spaced apart and leaving substantially non-embossed areas between said groups of embossment sites, wherein at least some of said non-embossed areas have an uninterrupted surface area of at least 1 cm² having no embossment sites thereon.

5 8. Method as claimed in claim 3, further comprising synchronizing the central embossing roll and the printing roll so that at least some of said non-embossed areas will have an uninterrupted surface area of at least 1.5 cm² with no embossment sites thereon.

10 9. Method as claimed in claim 3, further comprising synchronizing the central embossing roll and the printing roll so that at least some of said non-embossed areas will have an uninterrupted surface area of at least 2 cm² with no embossment sites thereon.

15 10. A device for producing a laminated embossed and printed web of flexible material, which comprises:

20 a printing roll adapted to carry a colorant in a selected pattern;
a central first embossing roll having a three dimensional pattern of protuberances being interrupted by relatively smooth areas;
a second embossing roll having a three dimensional pattern of protuberances being interrupted by relatively smooth areas;
25 said printing roll and said second embossing roll cooperating with and kept in registry with said central first embossing roll.

30 11. The device as claimed in claim 10, wherein the three dimensional patterns of protuberances of the central first embossing roll and the second embossing roll are identical or matching, and said embossing rolls are kept in registry so that their respective protuberances will meet in a foot-to-foot or nested configuration.

35 12. A laminated, printed and embossed web of flexible material, comprising at least one web-shaped flexible material which is embossed in selected areas while other areas are non-embossed and the web-shaped flexible material is printed in a selected pattern in said non-embossed areas, wherein the at least one web-shaped flexible material is laminated with at least one further web-shaped flexible material which is embossed in selected areas while other areas are non-embossed, by adhesive joining

of the embossed areas of the at least two web-shaped materials.

13. The laminated, printed and embossed web as claimed in claim 12, wherein the at least two web-shaped materials are embossed with identical or matching embossing patterns, and the embossed areas of the at least two web-shaped materials are joined in a foot-to-foot or nested configuration.
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14. The laminated, printed and embossed web as claimed in claim 13, wherein at least 50% of the printed area of said selected printing pattern is located on the non-embossed areas of the web.
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15. The printed and embossed web as claimed in claim 14, wherein at least 75% of the printed area of said selected printing pattern is located on the smooth, non-embossed portions of the web.
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16. The printed and embossed web as claimed in claim 14, wherein at least 90% of the printed area of said selected printing pattern is located on the smooth, non-embossed portions of the web.
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17. The printed and embossed web as claimed in claim 15, wherein substantially all printed area of said selected printing pattern is located on the smooth non-embossed portions of the web.
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18. The printed and embossed web as claimed in claim 12, wherein said selected embossed areas are arranged as groups of embossment sites spaced apart so as to leave non-embossed areas between said groups of embossment sites, and at least some of said non-embossed areas have an uninterrupted surface area of at least 1 cm² having no embossment sites thereon.
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19. The printed and embossed web as claimed in claim 18, wherein at least some of said non-embossed areas have an uninterrupted surface area of at least at least 1.5 cm² with no embossment sites thereon.
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20. The laminated, printed and embossed web as claimed in claim 12, wherein the web is a tissue paper product.